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Spray Program for

APPLES and PEARS

in the Willamette Valley

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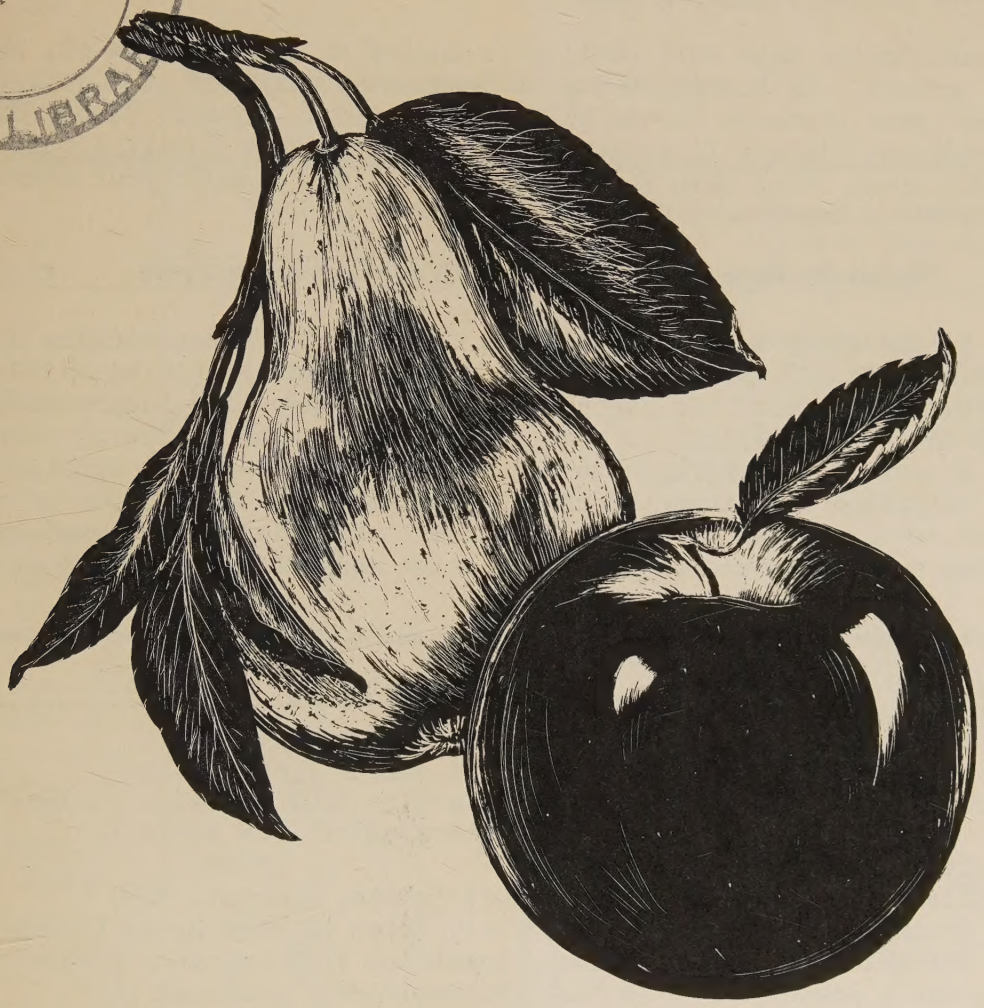

Federal Cooperative Extension Service • **Oregon State College** • **Corvallis**

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Extension Circular 664 (superseded by 677) **March 1960**

Spray Program For Apples And Pears In The Willamette Valley

Prepared by the Federal Cooperative Extension Service
in cooperation with the Departments of Entomology,
Plant Pathology, and Agricultural Chemistry,
Oregon State College

These schedules are prepared to meet spraying requirements for the control of various pests of apples and pears in the Willamette Valley. Note the discussion on spray residues on the following page.

It does not follow that this outline is needed in all orchards or, in fact, in any single orchard. This program may be used as a basis for pest control work in all apple and pear orchards in the Willamette Valley. Consult County Extension Agents and Experiment Station investigators for satisfactory modifications to meet your needs. For areas other than the Willamette Valley, consult your County Extension Agent or an Experiment Station worker.

Guide for Rate of Application with Air Carrier Sprayers

Dosages in the spray schedules refer to the amount of insecticides or fungicides to be mixed with 100 gallons of water, and as would be applied by the bulk method using hand spray guns. If air carrier sprayers are used, approximately the same amount of active ingredients is required per acre. The following chart gives the suggested amount of each spray material required per acre when applied to mature trees. It is suggested that these amounts be applied with 400 gallons of water per acre at a speed not in excess of 2 miles per hour. Experience with various types of equipment may enable growers to make economical and efficient modifications.

Spray material	Amount per acre
Bordeaux (6-6-100(Copper sulfate	24 lbs.
(lime	24 lbs.
Captan (50% wettable powder)	8-10 lbs.
Coromerc	2-3 lbs.
Cyprex (65% wettable powder)	4 lbs.
DDT (50% wettable powder)	8 lbs.
Diazinon (25% wettable powder)	8 lbs.
Dieldrin (50% wettable powder)	2 lbs.
Ferbam (76% wettable powder)	8 lbs.
Guthion	8-10 lbs.
Karathane (50% wettable powder)	6-8 lbs.
Kelthane (18 1/2% wettable powder)	10 lbs.
Lime sulfur (alone-dormant)	40 gals.
Lime sulfur) combined in	12 gals.
Dormant oil, 80%) dormant	10 gals.
Lime sulfur) combined	12 gals.
Volck Supreme Spray) in	
Oil) dormant	6 gals.
Lime sulfur (prepink)	12 gals.
Lime sulfur (pink, calyx)	10 gals.
Malathion (25% wettable powder)	8-12 lbs.
Methoxychlor (50% wettable powder)	10 lbs.
Oil (alone, dormant, 80%)	16 gals.
Oil, Volck Supreme Spray (dormant)	8 gals.
Parathion (25% wettable powder)	6 lbs.
Polysulfide) combined in	16 lbs.
Dormant oil) dormant	10 gals.
Polysulfide (prepink)	16 lbs.
Polysulfide (pink, calyx)	6-8 lbs.
Puratized Agricultural Spray	2-3 qts.
Sevin	12 lbs.
TAG	1-1 1/2 qts.
TEPP (20%)	1 1/2 pts.
Trithion (25% wettable powder)	3 lbs.
Wettable sulfur (scab, mildew)	24-40 lbs.
Ziram (76% wettable powder)	8 lbs.

Residue Tolerances

In preparing these spray programs, full consideration has been given to residue tolerances established by the Federal Food and Drug Administration. The suggested minimum number of days between last application of a pesticide and harvest is based on the best information available. All tolerances are subject to change and unusual local conditions or spray practices may affect the persistence of residues.

Regulations exempt petroleum oils, sulfur, lime sulfur, polysulfides, and Bordeaux from requiring a tolerance since they are not classed as poisonous or deleterious substances.

RESIDUE TOLERANCES ON POME FRUITS

Pesticide	Parts per million of permissible residue		Minimum number of days between last application and harvest
	Apples	Pears	
Captan	100	100	No restriction.
Coromerc.....	0	0	Not after petal fall.
Cyprex	0	5	Apple-no later than the first cover spray. Pears - 7
DDT.....	7	7	30
Diazinon.....	0.75	0.75	14
Dieldrin.....	0.25	0.25	35
Ferbam.....	7	7	7
Guthion.....	2	2	15
Karathane.....	-	-	21
Kelthane.....	5	5	7
Lead arsenate.....	7	7	30
Malathion.....	8	8	3
Methoxychlor.....	14	14	14
Parathion.....	1	1	14
Puratized Agricultural spray..	0	0	Not after petal fall.
Sevin	10	10	1
TAG.....	0	0	Not after petal fall.
TEPP (20%).....	0	0	3
Trithion.....	0.8	0.8	30
Ziram.....	7	7	No restriction.

Spray Schedule for Apples in the Willamette Valley

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
DORMANT SPRAY As winter buds swell just before opening.	Blister mite, San Jose scale	Lime sulfur, 10 gals. (See footnote 1)*
	San Jose scale, oyster shell scale, leaf roller, spider mites, aphids	Lime sulfur, 3 gals., + 2% dormant oil emulsion (2 1/2 gals. 80% emulsion concentrate), or Lime sulfur, 3 gals., + 1 1/2 gals. Volck Supreme oil spray, or Oil spray, 3.2% dormant oil emulsion (4 gals. 80% emulsion concentrate), or Oil spray, 2 gals. Volck Supreme oil spray, or Polysulfide, 4 lbs., + 2% dormant oil emulsion (2 1/2 gals. 80% emulsion concentrate), or Polysulfide, 4 lbs., + 1 1/2 gals. Volck Supreme oil spray.
	Anthracnose	Bordeaux 6-6-100 (See footnote 2)
PREPINK OR GREEN BUD SPRAY Little leaves separating just enough to expose blossom bud cluster.	Scab and powdery mildew	Lime sulfur, 3 gals., or Polysulfide, 4 lbs.
	Scab only	Coromerc, 1/2 lb., or Cyprex, 3/4 lb. (See footnote 3), or Lime sulfur, 3 gals., or Polysulfide, 4 lbs., or Puratized Agricultural Spray, 1 pt., or TAG, 1/2 pt.
	Mildew only	Karathane, 1 lb., + a nonoil spreader. (See footnote 9)
	FOR Aphids	ADD Diazinon, 2 lbs. 25% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Nicotine sulfate, 3/4 pt. + spreader, or Parathion, 1 lb. 25% wettable powder

*See footnotes at end of table.

Spray Schedule for Apples (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
PINK OR PREBLOSSOM SPRAY Just before blossoms open.	Scab and mildew	Lime sulfur, 2 1/2 gals., or Lime sulfur, 1 gal., + wettable sulfur, 4 lbs., or Polysulfide, 1 1/2-2 lbs., + 4 lbs. wettable sulfur
	Scab only	Coromerc, 1/2 lb., or Cyprex, 3/4 lb., or Lime sulfur, 2 1/2 gals., or Lime sulfur, 1 gal., + wettable sulfur, 4 lbs. or Polysulfide, 1 1/2 lbs., + 4 gals. wettable sulfur, or Puratized Agricultural Spray, 1 pt., or TAG, 1/2 pt.
	Mildew only	Karathane, 1 lb., + a nonoil spreader (See footnote 9)
CALYX SPRAY When 3/4 petals have fallen. Apply before calyx closes on central fruit cluster. For codling moth control, the calyx spray may be omitted if a DDT program is followed.	Scab and mildew	Lime sulfur, 2 1/2 gals., or Lime sulfur, 1 gal. + wettable sulfur, 4 lbs. (See footnote 4)
	Scab only	Captan, 2 lbs. (See footnotes 5 and 6), or Cyprex, 3/4 lb., or Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs.
	Mildew only	Karathane, 1 lb., + a nonoil spreader (See footnote 9)
	FOR Codling moth, leaf roller, fruit worm	ADD Lead arsenate, 3 lbs. (See footnote 7)
FIRST COVER SPRAY About 15 days after petal fall. (See footnote 8)	Scab and mildew	Wettable sulfur, 6 lbs.

Spray Schedule for Apples (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
FIRST COVER SPRAY (Continued) About 15 days after petal fall. (See footnote 8)	Scab only	Captan, 2 lbs. (See footnotes 5 and 6), or Cyprex, 3/4 lb., or Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs.
	Mildew only	Karathane, 1 lb., + a nonoil spreader (See footnote 9)
	FOR Codling moth	ADD DDT, 2 lbs. 50% wettable powder, or Lead arsenate, 3 lbs., or Guthion, 1 1/2 lbs. 25% wettable powder
	FOR Spider mites	ADD Kelthane, 1 1/2 lbs. 18 1/2% wettable powder (See footnote 10), or Malathion, 2 lbs. 25% wettable powder (See footnote 9), or Parathion, 1 lb. 25% wettable powder (See footnote 9)
SECOND COVER SPRAY 15 or more days after first cover spray. (See footnote 8)	Scab and mildew	Wettable sulfur, 6 lbs., or Sulfur dust, 50 lbs.
	Scab only	Captan, 2 lbs. (See footnotes 5 and 6), or Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs.
	Mildew only	Karathane, 1 lb., + a nonoil spreader (See footnote 9)
	FOR Codling moth	ADD DDT, 2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Sevin, 1 1/2 lbs. 50% wettable powder, or Diazinon, 2 lbs. 25% wettable powder, or Lead arsenate, 3 lbs.

Spray Schedule for Apples (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
SECOND COVER SPRAY (Continued) 15 or more days after first cover spray. (See footnote 8)	FOR Spider mites	ADD Kelthane, 1 1/2 lbs. 18 1/2% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Parathion, 1 lb. 25% wettable powder, or Trithion, 3/4 lb. 25% wettable powder
THIRD COVER SPRAY Usually about last of July or first week in August. (See footnote 8)	Codling moth	DDT, 2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Sevin, 1 1/2 lbs. 50% wettable powder, or Diazinon, 2 lbs. 25% wettable powder, or Lead arsenate, 3 lbs.
	FOR Spider mites	ADD Kelthane, 1 1/2 lbs. 18 1/2% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Parathion, 1 lb. 25% wettable powder, or Trithion, 3/4 lb. 25% wettable powder.
FOURTH COVER SPRAY (See footnote 8)	Codling moth	DDT, 2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Sevin, 1 1/2 lbs. 50% wettable powder, or Diazinon, 2 lbs. 25% wettable powder, or Lead arsenate, 3 lbs.
	FOR If spider mites a problem	ADD Kelthane, 1 1/2 lbs. 18 1/2% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Parathion, 1 lb. 25% wettable powder, or Trithion, 3/4 lb. 25% wettable powder

Spray Schedule for Apples (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
FOURTH COVER SPRAY (Continued) (See footnote 8)	FOR Anthracnose and apple rots	ADD Bordeaux, 6-3-100, or Ziram, 1 1/2 lbs. (See footnote 11)

Footnotes:

1. The proportions of lime sulfur recommended for sprays in this circular are based on the use of the standard concentrated liquid lime sulfur, testing 32° Baume hydrometer test.

2. Use oil emulsion, 3.2% actual oil, plus Bordeaux 6-6-100. This spray will control all other pests listed except blister mite. Bordeaux is not compatible with lime sulfur or polysulfide.

3. Cyprex is not compatible with lime or chlorobenzilate and should not be combined with oils or oil emulsions.

4. Lime sulfur may injure Delicious and Delicious strains during hot weather. During such weather conditions, use either Ferbam, 1 1/2 pounds, or Ziram, 1 1/2 pounds to 100 gallons of water.

5. Captan may cause minor leaf spotting to Delicious under certain conditions.

6. Captan is not compatible with malathion.

7. To reduce the possibility of spray burn when lead arsenate is combined with lime sulfur, add 1 pound hydrated lime to 100 gallons.

8. Consult County Agent or Experiment Station worker for timing. In most counties, spray notices are sent out by County Agents or appear in local papers.

9. Karathane is not compatible with malathion, parathion, diazinon, or lead arsenate.

10. If sulfur sprays fail to check red spiders, use parathion, malathion, or Kelthane. Parathion, malathion, and Kelthane may be added to lead arsenate or DDT sprays. Parathion, Kelthane, and malathion are compatible with wettable sulfur.

11. In seasons of early fall rains, the presence of Bordeaux spray on light-colored varieties may cause reddish spotting around the lenticels. Such fruit should be picked early or sprayed with Ziram to avoid fruit infection.

Spray Schedule for Pears in the Willamette Valley

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
DORMANT SPRAY As winter buds swell just before opening	Blister mite, San Jose scale	Lime sulfur, 10 gals. (See footnote 1)*
DELAYED DORMANT OR GREEN TIP STAGE Apply before bud scales drop	Scab and powdery mildew	Lime sulfur, 3 gals., + 2% dormant oil emulsion (2 1/2 gals. 80% emulsion concentrate), or
	San Jose scale, oyster shell scale, leaf roller, spider mites, aphids, pear psylla	Lime sulfur, 3 gals., + 1 1/2 gals. Volck Supreme oil spray, or Oil spray, 3.2% dormant oil emulsion (4 gals. 80% emulsion concentrate), or Oil spray, 2 gals. Volck Supreme oil spray, or Polysulfide, 4 lbs., + 2% dormant oil emulsion (2 1/2 gals. 80% emulsion concentrate), or Polysulfide, 4 lbs., + 1 1/2 gals. Volck Supreme oil spray
PINK OR PREBLOSSOM SPRAY Just before blossoms open	Scab only	On Anjou, Comice, Seckel, or Bartlett use Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs., or Cyprex, 3/4 lb. (See footnote 2)
	Scab and mildew	On Bartlett only, use one of the following: Lime sulfur, 2 1/2 gals., or Lime sulfur, 1 gal. + wettable sulfur, 4 lbs., or Polysulfide, 1 1/2-2 lbs. + wettable sulfur, 4 lbs.
	Mildew only	Karathane, 3/4 lb. on all varieties + a nonoil spreader (See footnote 5)
	FOR Fruit worms, leaf roller, and bud moth	ADD Lead arsenate, 3 lbs. With lime sulfur, add hydrated lime, 1 lb. to 100 gals.

*See footnotes at end of table.

Spray Schedule for Pears (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
CALYX SPRAY When 3/4 petals have fallen. Before pear calyx or central fruit cluster closes. For codling moth control, the calyx spray may be omitted if a DDT program is followed.	Scab only	On Anjou, Comice, Seckel, or Bartlett use Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs., or Cyprex, 3/4 lb.
	Scab and mildew	On Bartlett only, use one of the following: Lime sulfur, 1 gal. + wettable sulfur, 4 lbs., or Lime sulfur, 2 1/2 gals., or Wettable sulfur, 6 lbs.
	Mildew only	Karathane, 1/2 lb. on all varieties + a nonoil spreader (See footnote 5)
	FOR Codling moth, leaf roller, fruit worm	ADD Lead arsenate, 3 lbs. (See footnote 3)
FIRST COVER SPRAY About 15 days after petals fall (See footnotes 4 and 5)	Scab only	On Anjou, Comice, Seckel, or Bartlett, use Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs., or Cyprex, 3/4 lb.
	Scab and mildew	On Bartlett use wettable sulfur, 6 lbs.
	Mildew only	On Bartlett use Karathane, 1/2 lb., + a nonoil spreader. (See footnote 5)
	FOR Codling moth, pear psylla, spider mites, pear slug	ADD DDT, 2 lbs. 50% wettable powder, or Lead arsenate, 3 lbs., or Sevin, 1 1/2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Diazinon, 2 lbs. 25% wettable powder Note: Add to DDT or lead arsenate sprays one of the following for pear psylla control. Parathion, 1 lb. 25% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Dieldrin, 1/2 lb. 50% wettable powder (See footnote 6)

Spray Schedule for Pears (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
SECOND COVER SPRAY 15 or more days after first cover spray (See footnotes 4 and 5)	Scab only	On Anjou, Comice, Seckel, or Bartlett use Ferbam, 1 1/2 lbs., or Ziram, 1 1/2 lbs., or Cyprex, 3/4 lb.
	Scab and mildew	On Bartlett only use wettable sulfur, 6 lbs.
	FOR Codling moth, pear psylla, spider mites	ADD DDT, 2 lbs. 50% wettable powder, or Lead arsenate, 3 lbs., or Sevin, 1 1/2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Diazinon, 2 lbs. 25% wettable powder Note: Add to DDT or lead arsenate sprays one of the following for pear psylla control. Parathion, 1 lb. 25% wettable powder, or Malathion, 2 lbs. 25% wettable powder, or Dieldrin, 1/2 lb. 50% wettable powder (See footnote 6) If spider mites are not being controlled by program of choice, add: Kelthane, 1 1/2 lbs. 18 1/2% wettable powder (See footnote 6)
THIRD COVER SPRAY Usually about last of July or first week in August (See footnote 4)	Codling moth, pear psylla, spider mites	DDT, 2 lbs. 50% wettable powder, or Lead arsenate, 3 lbs., or Sevin, 1 1/2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Diazinon, 2 lbs. 25% wettable powder Note: Add to DDT or lead arsenate sprays one of the following for pear psylla control. Parathion, 1 lb. 25% wettable powder, or Malathion, 2 lbs. 25% wettable powder or If spider mites are not being controlled by program of choice add: Kelthane, 1 1/2 lbs. 18 1/2% wettable powder. (See footnote 6)

Spray Schedule for Pears (Continued)

(See page 3 for interval between application of pesticide and harvest.)

Time of application	Pest or disease	Material and amount per 100 gals. of spray
FOURTH COVER SPRAY (See footnote 4)	Codling moth, pear psylla, spider mites	DDT, 2 lbs. 50% wettable powder, or Lead arsenate, 3 lbs., or Sevin, 1 1/2 lbs. 50% wettable powder, or Guthion, 1 1/2 lbs. 25% wettable powder, or Diazinon, 2 lbs. 25% wettable powder Note: Add to DDT or lead arsenate sprays one of the following for pear psylla control. Parathion, 1 lb. 25% wettable powder, or Malathion, 2 lbs. 25% wettable powder. If spider mites are not being controlled by program of choice, add: Kelthane, 1 1/2 lbs. 18 1/2% wettable powder. (See footnote 6)
POST HARVEST In fall after all fruit harvested	Blister mite	Lime sulfur, 6 gals., or Lime sulfur, 4 gals., + 2 lbs. wettable sulfur, or To control blister mite and pear psylla use Diazinon, 2 lbs. 25% wettable powder, or To control blister mites and spider mites use Kelthane, 1 1/2 lbs. 18 1/2% wettable powder.

Footnotes:

1. The proportions of lime sulfur recommended for sprays in this bulletin are based on the use of the standard concentrated liquid lime sulfur, testing 32° by Baume hydrometer test.

2. Cyprex is not compatible with lime or chlorobenzilate and should not be combined with oils or oil emulsions.

3. To reduce the possibility of spray burn, when lead arsenate is combined with lime sulfur, add 1 pound hydrated lime to 100 gallons of the spray mixture.

4. Consult County Agent or Experiment Station worker for timing. In most counties spray notices are sent out by County Agents or appear in local papers. Usually fourth cover spray is unnecessary on pears.

5. Parathion, malathion, dieldrin, and Diazinon are compatible with Ferbam, Ziram, and wettable sulfur. Do not combine Karathane with parathion, malathion, Diazinon, or lead arsenate.

6. Dieldrin is effective against pear psylla, but does not control codling moth or spider mites. Kelthane is effective against spider mites, but not against pear psylla or codling moth. Sevin controls codling moth and pear psylla but not spider mites. Guthion and Diazinon control codling moth and pear psylla, but are usually only partially effective against spider mites.

Spray Chemicals Kill People Too!

Many of the materials mentioned in this bulletin, such as DNOC, ALDRIN, DIELDRIN, ENDRIN, NICOTINE SULFATE, TAG and PURATIZED AGRICULTURAL SPRAY, are dangerous poisons and all require careful handling, but the organic phosphorus insecticides - DEMETON (SYSTOX), DIAZINON, EPN, GUTHION, METACIDE, PARATHION, PHOSDRIN, SCHRADAN (SYTAM), TEPP, THIMET, AND TRITHION - are extremely poisonous and require a special warning.

Malathion is also an organic phosphorus insecticide, but is less hazardous than the others listed above.

Watch for These Symptoms

The pesticides mentioned above easily enter the body through contact with the skin as well as through the mouth and throat and through breathing. Repeated exposures to those compounds may, even without symptoms, increase susceptibility to poisoning. The initial symptoms of organic phosphorus poisoning are giddiness, headache, nausea, vomiting, excessive sweating, and tightness of the chest. These are followed by or accompanied by blurring of vision, diarrhea, excessive salivation, watering of the eyes, twitching of muscles, especially in the eyelids, and mental confusion. One of the most characteristic signs is constriction of the pupils but this may be preceded by dilation. Late signs are fluid in the chest, convulsions, coma, loss of urinary or bowel control, and respiratory failure.

Poisoning by the chlorinated hydrocarbon insecticides primarily affects the nervous system. Symptoms include hyperexcitability, tremors, and convulsions, as well as malaise, headache, fatigue, and possible lack of appetite and weight loss.

What to Do for Poisoning

1. In severe cases of organic phosphorus poisoning, breathing may stop. In such a situation artificial respiration is the most important first aid until breathing has resumed.

2. Get the patient to a hospital or physician as soon as possible. Give artificial respiration on the way if the patient turns blue or stops breathing. Take along a label for the doctor's information. Never try to give anything by mouth to an unconscious patient.

3. INTERNAL---If the insecticide has been swallowed and vomiting has not resulted, induce vomiting by giving a strong soap solution or a tablespoonful of salt dissolved in one-half a glassful of warm water.

4. SKIN---Where the insecticide has come into contact with the skin, immediately remove all clothing and bathe the patient with generous amounts of soap and water, rinsing thoroughly. If spray gets in the eyes, wash them immediately with flowing water.

5. The patient should be made to lie down and should be kept warm.

In Case of Emergency

See your doctor at once. Your doctor may call the Oregon Poison Control Registry, in Portland, Oregon. Daytime: CA 8-9181. Night (11 p.m. to 7 a.m.): CA 8-5546.

This service maintains up-to-date files on all agricultural chemicals and other poisons. The service is available to professional persons only.

Take These Precautions

CLOTHING---Wear protective waterproof clothing while spraying hazardous materials. Change and launder clothing and bathe daily.

MASK---When loading or mixing wettable powders or when applying dusts wear a respirator approved for the material in question by the U.S. Department of Agriculture.

GENERAL

1. Before using organic phosphorus insecticides, notify your physician. He will be better able to treat a sudden illness if he is told of probable spraying dates and other details. He may wish you to have a supply of 1/100 gr. atropine tablets for use in an emergency. This drug should never be used before exposure to organic phosphorus insecticides, for it may hide important warning symptoms. Use one or two tablets only after definite symptoms occur. Never take atropine without calling your physician at once. Any person who is ill enough to receive a single dose of atropine should remain under medical observation for 24 hours, because the atropine may produce only a temporary relief of symptoms in what may prove to be a serious case of poisoning.

2. NEVER MEASURE OR LEAVE MIXTURES OF INSECTICIDES IN BEVERAGE BOTTLES OR IN LABELED CANS OR BOXES WHICH HAVE FORMERLY CONTAINED FOOD PRODUCTS. BURN OR BURY EMPTY INSECTICIDE BAGS OR OTHER CONTAINERS. (EACH YEAR TRAGIC, PREVENTABLE POISONINGS OCCUR WHEN CHILDREN OBTAIN FOOD CONTAINERS FILLED WITH INSECTICIDE OR GET HOLD OF "EMPTY" INSECTICIDE CONTAINERS.)

3. Do not eat, smoke, or chew while mixing or applying hazardous insecticides.

4. Mix insecticides according to directions and apply at the recommended rate.

5. Experience indicates that poisoning occurs most often in hot weather. Spraying should be done during cooler periods (such as at night) whenever possible and extra care taken when it is necessary to spray during periods of high temperature.

6. Apple thinners and others have been poisoned by working in orchards treated with parathion less than 48 hours before. Therefore, it is advisable to wait longer than 48 hours before beginning work in treated orchards. If possible, wait a week.

7. Bury spilled insecticide and wash contaminated parts of the body with soap and copious amounts of water. The breakdown of these insecticides can be speeded up by using a weak lye solution.

8. Cover crops treated with organic phosphorus insecticides should not be used as pasture until two weeks after treatment. Cattle should not be fed forage crops treated with dieldrin or endrin.

This warning statement was prepared with the assistance of staff members of the Wenatchee, Washington Field Station of the Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare.

NOTE: This Circular is revised from and is to supersede Extension Circular 508, an earlier edition of the same title.